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OFFICE OF INSPECTOR GENERAL

Catalyst for Improving the Environment

Evaluation Report

Implementation, Information, and Statutory Obstacles Impede Achievement of Environmental Results from EPA's National Hardrock Mining Framework

Report No. 2003-P-00010

April 21, 2003

DRAFT

NOT TO BE RELEASED OUTSIDE EPA

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Abbreviations

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
NEPA	National Environmental Policy Act
NMA	National Mining Association
NPDES	National Pollutant Discharge Elimination System
OIG	Office of Inspector General
RCRA	Resource Conservation and Recovery Act

Cover photo: Photograph of the Coeur D'Alene Mine in Idaho is courtesy of the Colorado School of Mines, Department of Chemistry and Geochemistry.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
INSPECTOR GENERAL

April 21, 2003

MEMORANDUM

SUBJECT: Draft Evaluation Report:
Implementation, Information, and Statutory Obstacles Impede Achievement of Environmental Results from EPA's Hardrock Mining Framework

FROM: Kwai Cheung-Chan /s/
Assistant Inspector General
Office of Program Evaluation

TO: Linda Fisher
Deputy Administrator

Marianne Lamont Horinko
Assistant Administrator
Office of Solid Waste and Emergency Response

This is a draft report on the subject evaluation conducted by the Office of Inspector General (OIG) of the U.S. Environmental Protection Agency (EPA). This draft report is subject to revision by the OIG and, therefore, does not represent the final position of the OIG on the subjects reported. It is provided to you solely for the purpose of obtaining your review and comments. You are not authorized to distribute or disclose this draft or its contents, except that you may distribute it to other persons in your organization to obtain their review and comments on the subjects reported.

Action Required

In accordance with EPA Order 2750, you are required to provide a written response to the findings and recommendations presented in this draft report within 30 days of the draft report date. The response should address the factual accuracy of the draft report and indicate concurrence or nonconcurrence with each finding and proposed recommendation. If you do not concur with a proposed recommendation, please provide any alternative actions you wish to be considered for the final report. Your response should identify any corrective actions already initiated or planned. The final report will include an assessment of your comments, and we reserve the right to modify our report in light of your response. In addition to providing a written

copy of your response, please e-mail an electronic version of your response to Carolyn Copper at copper.carolyn@epa.gov.

If you or your staff have any questions regarding this report, please contact me at (202) 566-0827 or Carolyn Copper at (202) 566-0829.

Executive Summary

Purpose

This review is part of the Office of Inspector General's (OIG's) evaluation of Superfund mega-sites. The U.S. Environmental Protection Agency's (EPA's) Office of Solid Waste and Emergency Response suggested that we examine the issue of mega-sites due to potentially significant cost implications for the Superfund Trust Fund. Because of the high costs and complexities associated with cleaning up hardrock mining sites, and the common perception that they may account for a large proportion of future mega-sites, we conducted our initial evaluation on the Agency's National Hardrock Mining Framework.

Background

Hardrock mining can cause significant impacts on the environment, potentially affecting ground and surface waters, aquatic life, vegetation, soils, air, wildlife and human health. Hardrock mining involves the extraction of certain metals and minerals found in hard formations of the earth. These metals and minerals serve as the primary raw materials for most of the industrial, commercial, and consumer equipment and structures produced by the U.S. economy. They include, among others, copper, gold, iron ore, lead, and silver. EPA estimates there may be as many as 200,000 abandoned hardrock mines in the United States. As of January 2003, 87 abandoned hardrock mine sites were included on the Superfund National Priorities List. EPA estimates that it will cost a total of about $2 billion to clean up these sites.

A complex set of Federal and State environmental laws and regulations apply to hardrock mining activities. Although EPA can inherit the responsibility for cleaning up hardrock mining sites, the Agency is just one of several with a role in regulating the environmental impacts associated with hardrock mining.

In September 1997, EPA issued the National Hardrock Mining Framework to provide a multimedia, multistatute approach for handling environmental issues posed by proposed, active, and abandoned hardrock mining sites. The overall goals of the Framework were to achieve improved environmental protection, use resources more efficiently, and promote fiscal responsibility.

Results

The primary goal of the Hardrock Mining Framework was to protect human health and the environment at proposed, active, and abandoned mine sites on both Federal and non-federally managed lands through appropriate and timely pollution prevention, control, and remediation. EPA spent 3 years developing the Framework and it has been available for 5 years. However, we found no evidence

that the Framework contributed to environmental improvements or protections at specific hardrock mining sites. There are regulatory and non-regulatory reasons for this.

Despite some perceptions, the nature of hardrock mining regulations, environmental laws and regulations, and the manner in which both are implemented present obstacles to what the Agency can realistically accomplish in preventing or minimizing the environmental impacts of hardrock mining. For example, the Agency has limited authority to directly establish up-front pollution controls at hardrock mining sites on public or private lands, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) largely allows the Agency to respond after environmental damage has occurred, amendments to the Resource Conservation and Recovery Act (RCRA) exempt some mining wastes from regulation, and EPA has only an advisory role in the development of environmental impact statements for mining operations on Federal lands.

In addition, EPA did not develop or communicate a strategy for implementing the Framework, management did not support it, there was inadequate coordination within the Agency and between EPA and other agencies, and the Agency does not have current, accurate data on the extent of financial and environmental challenges posed by hardrock mining activities to assist management in determining appropriate strategies and actions to address existing and potential mining sites. Without an adequate implementation strategy, accountable offices and management support, profile of hardrock mining impacts, internal and interagency coordination, and strengthened EPA authorities, the environmental protection goals of the Framework will be difficult to achieve.

If current program management supports the utility and relevance of the Framework, EPA should consider policy and regulatory changes to help achieve the environmental goals of the Framework.

Recommendations

EPA program management, including the Deputy Administrator, Assistant Administrator for the Office of Solid Waste and Emergency Response, and other senior EPA management the Administrator deems appropriate, need to determine if the Framework has current utility. If EPA program management believes the Framework has current utility in helping to achieve goals of protecting human health and the environment at proposed, active, and abandoned hardrock mine sites, we recommend that EPA develop effective implementation strategies that account for existing gaps in the framework, lack of necessary coordination, and regulatory challenges. If EPA program management does not believe the Framework has current utility in helping to achieve goals of protecting human health and the environment at proposed, active, and abandoned hardrock mines, we recommend that EPA identify specific Framework recommendations and action items that are no longer warranted or require revision.

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Chapter 1
Introduction

Purpose

This review is part of the EPA OIG's evaluation of Superfund mega-sites. During our fiscal 2001 planning process, EPA's Office of Solid Waste and Emergency Response suggested that we examine the topic of Superfund mega-sites due to their potential significant cost implications for the Superfund program. Because of the high costs and complexities associated with cleaning up hardrock mining sites, and the common perception that they may account for a large portion of future mega-sites, we conducted our initial evaluation on hardrock mining sites. Specifically, we reviewed results obtained and progress associated with the Agency's 1997 National Hardrock Mining Framework.

Objectives

We addressed the following questions:

- Are human health and environmental concerns being addressed by implementing the Framework?
- Is the Framework viable under current EPA and governmental authorities?
- Are there gaps or shortfalls in the Framework?

Background

Environmental Consequences of Hardrock Mining Can be Significant

In its 1999 report, *"Hardrock Mining on Federal Lands,"* the National Research Council of the National Academy of Sciences (a non-profit research organization that, under Congressional mandate, advises the Federal government on scientific and technical matters) noted that hardrock mining can cause significant impacts on the environment, potentially affecting ground and surface waters, aquatic life, vegetation, soils, air, and wildlife. Mining sites are typically large, complex, and costly to clean up. Many hardrock mining sites have estimated cleanup costs greater than $50 million, which was categorized as a "mega-site" in a 2001 report on the future of the Superfund program by Resources for the Future (a nonprofit research organization).[1]

[1]Resources for the Future's use of financial criteria to define mega-sites was conventional at the time of their report. However, this approach does not consider site criteria (e.g., nature of contaminants, number of operable units, site acreage), risk criteria (e.g., environmental, ecological, and human health), or other factors (e.g., complexity), in defining mega-sites.

Hardrock mining is not coal mining. Hardrock mining involves the extraction and beneficiation (separation of minerals/metals from waste) of certain metals and minerals found in hard formations of the earth. The removal and beneficiation result in large quantities of waste (e.g., waste rock, tailings, mine water). The total amount of waste produced can range from 10 percent (potash) to 99.99 percent (gold). Open mine pits, tailings ponds, ore stockpiles, and waste rock dumps can all be significant sources of toxic pollutants, primarily heavy metals such as cadmium and lead. EPA's *Toxics Release Inventory 2000* report indicates that the metal mining industry (metal mining is synonymous with hardrock mining) was the largest toxic polluter in 2000, releasing 3.4 billion pounds of toxics, or 47 percent of the total released by U.S. industry (see Figure 1.1).

Figure 1.1. Toxics Release Inventory

Industry	On-site Land Releases: RCRA Subtitle C Landfills Pounds	On-site Land Releases: Other Landfills Pounds	On-site Land Releases: Land Treatment Pounds	On-site Land Releases: Surface Impoundments Pounds	On-site Land Releases: Other Disposal Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
Metal Mining	0	21,782,594	2,006	888,978,322	2,407,123,486	3,357,144,895	621,752	3,357,766,648
Coal Mining	0	7,785,330	1,921,712	3,120,638	992,332	15,987,981	20	15,988,001
Electric Utilities	1,373,383	143,263,331	2,240,899	137,415,018	4,574,902	1,080,898,816	74,334,647	1,155,233,463
Chemical Wholesale Distributors	0	0	0	0	83,151	1,429,576	183,893	1,613,469
Petroleum Terminals/Bulk Storage	466	0	1,122	101	33,425	3,421,226	460,550	3,881,776
Hazardous Waste/Solvent Recovery	194,611,003	10,730,459	0	2,192,315	18	242,431,230	46,636,855	289,067,085
Total	196,364,872	183,578,714	4,165,739	1,029,708,394	2,412,783,315	4,701,293,724	122,236,717	4,823,530,441

Note: RCRA = Resource Conservation and Recovery Act
Source: EPA's Toxics Release Inventory 2000, May 2002

EPA estimates there may be as many as 200,000 abandoned hardrock mines in this country. As of January 2003, 87 abandoned mine sites were included on the Superfund National Priorities List. The Agency estimates that it will cost a total of about $2 billion to clean up these sites.[2]

The U.S. Forest Service estimates that approximately 10,000 miles of rivers and streams may have been contaminated by acid mine drainage. Acid mine drainage can occur when iron sulfides in rock are exposed to water and oxygen (see photographs on next page). The process of mining brings sulfide-bearing rock to the earth's surface, fractures it, and exposes substantial amounts to weathering. The minerals gradually oxidize to form dilute sulfuric acid and ferric hydroxide, resulting in acid mine drainage. When acid drainage occurs, it is extremely

[2]This does not include sites on Bureau of Land Management land. The Bureau estimates it may cost as much as $35 billion to clean up contaminated hardrock mine sites on Bureau lands.

difficult and costly to control. According to the National Research Council, "improved methods for prediction, prevention, and long-term treatment are needed to minimize the expenses related to acid drainage and to enhance the long-term protection of the environment."[3] Resources for the Future noted that it would be difficult, if not impossible, to achieve water quality standards at some sites due to acid drainage and leaching of mine wastes.[4]

Figure 1.2. Acid mine drainage at Galax, Virginia (left) and Prospect Gulch, Cement Creek, Colorado (right)

According to EPA, in recent years, environmental practices employed by the mining industry have improved considerably and reduced the environmental impacts from mining projects. Bureau of Land Management data indicate the number of plans and notices of operations for new mining activities has fallen approximately 50 percent since 1992. Some improvements made in mining operations include best practices for control of storm water runoff, better treatment of wastewater, better management of tailings and waste rock, and more efficient metal recovery technologies. The National Research Council noted that some environmental changes resulting from hardrock mining may actually benefit wildlife, such as creation of mine tunnels that, when later abandoned, can be used by bat communities. Also, reclaimed waste rock sites and other terrestrial changes can provide substantial areas of forage attracting various wildlife.

[3] *Hardrock Mining on Federal Lands*, National Research Council, 1999

[4] *Superfund's Future: What Will It Cost?*, Katherine N. Probst and David M. Konisky, Resources for the Future, 2001

Multiple Laws and Agencies Involved in Hardrock Mining Activity

A complex set of Federal and State environmental laws and regulations apply to hardrock mining activities. The type and size of mining operations; kinds of land, water, and biological resources affected; organization of State and local permitting agencies; and the manner in which Federal and State agencies implement appropriate laws and regulations determine the degree and effectiveness of regulation. A significant amount of hardrock mining occurs on Federal lands in the Western States. The U.S. General Accounting Office estimated that mines on Federal lands in the Western States comprised 30 percent of all gold and 29 percent of all silver production in the Western States in 1990.

Cleanup of mine sites located on federally-owned lands is the responsibility of the Federal agency having jurisdiction over the land, unless those lands become patented and thus private, at which point the States and/or EPA take over cleanup responsibility. The General Mining Law of 1872 is the primary statute regarding hardrock mining on Federal lands. The Federal Land Policy and Management Act of 1976 for the Bureau of Land Management and the 1897 Organic Act and 1976 National Forest Management Act for the U.S. Forest Service provide direction for federal land management.

Development of the National Hardrock Mining Framework

In September 1997, EPA issued the National Hardrock Mining Framework to provide a multi-media, multi-statute approach for handling environmental issues posed by hardrock mining activities. The key goals of the Mining Framework were to achieve improved environmental protection, use resources more efficiently, and promote fiscal responsibility. The number one goal of the Framework was to protect human health and the environment through appropriate and timely pollution prevention, control, and remediation. This goal was to apply to general management approaches at proposed, active, and abandoned mine sites on both Federal and non-federally managed lands. The Framework included 14 recommendations and 10 action items (see Appendix A). An explicit goal of the Framework was *not* to attempt to broaden the Agency's authorities beyond those granted by Congress. The Agency believed that the Framework recommendations were within the scope of EPA's "responsibility" and would serve as the basis for achieving its goals. While there is no current consensus, or conventional method for defining or identifying mine sites, as stated earlier, EPA estimates the number of hardrock mine sites in the United States at 200,000.

A need for the Framework was identified in 1994 when the Deputy Administrator tasked the Office of Water with developing an Agency-wide Mining Framework. The Office of Water partnered with the Office of Solid Waste and Emergency Response, Office of Enforcement and Compliance Assurance, Office of General Counsel, and the Regions to draft the Framework. In addition, EPA solicited

input from various mining stakeholders, including other Federal agencies such as Department of Interior's Bureau of Land Management and Office of Surface Mining, and Department of Agriculture's U.S. Forest Service; States, including Colorado, Montana, and Nevada; tribes; local governments; industry; and environmental groups, such as the Western Mining Action Project. In June 1997, OIG issued report E1DMF6-08-0016-7100223, "EPA Can Do More to Help Minimize Hardrock Mining Liabilities," which recommended that EPA finalize and implement its hardrock mining strategy to encourage more effective use of existing authorities to address hardrock mining issues and strengthen partnerships with mining stakeholders.

Scope and Methodology

We conducted our evaluation from April 2002 to November 2002. To achieve our objectives, we administered a survey to EPA National Mining Team members in headquarters and regional offices. We sent the survey to six headquarters offices and nine regional offices. One region did not participate in the survey due to limited hardrock mining activity in the region. Four headquarters offices (Office of Emergency and Remedial Response, Office of Solid Waste, Office of Site Remediation Enforcement, and Office of Federal Activities) and seven regional offices (Regions 1, 3, 5, 6, 8, 9, 10) responded to our survey. We did not verify the accuracy of survey responses. The survey included questions regarding the status and implementation of Framework recommendations and six of ten action items, accomplishments, gaps in the Framework, barriers to implementation, and ideas for improvement (see Appendix B).

We also interviewed external stakeholders, including representatives of other Federal agencies (Department of Interior's Bureau of Land Management and Office of Surface Mining, Department of Agriculture's U.S. Forest Service), the Western Governors' Association, National Mining Association (NMA), Mineral Policy Center, and Center for Science in Public Participation, to obtain their perspectives. NMA also provided extensive written comments on the National Hardrock Mining Framework. These are summarized in Appendix C. We did not receive written comments from other external stakeholders.

We reviewed prior reports, including the 1997 OIG report on minimizing hardrock mining liabilities, and reports issued by the National Research Council, National Academy of Sciences, Resources for the Future, Center for Science in Public Participation, and Mineral Policy Center.

We performed our evaluation in accordance with *Government Auditing Standards*, issued by the Comptroller General of the United States.

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Chapter 2
Mining Framework Has Had Little Impact in Resolving Human Health and Environmental Concerns at Hardrock Mining Sites

The primary goal of the National Hardrock Mining Framework was to protect human health and the environment at hardrock mining sites through timely pollution prevention, control, and cleanup. However, the Framework has had little effect in addressing human health and environmental concerns at specific mine sites. Without an adequate implementation strategy, management support, improved intra- and interagency coordination and cooperation, and strengthened EPA authorities, the environmental protection goals of the Framework will be difficult to achieve. Gaps in the Framework are also barriers to its effectiveness. Current, accurate data on the extent of financial and environmental challenges posed by hardrock mining activities is critical to assist management in determining appropriate strategies, actions, or programs to address challenges posed by hardrock mining. This information is also necessary for decisions concerning the viability and relevance of the existing Framework. If current program management supports its utility and relevance, EPA could consider policy and regulatory changes to help achieve the environmental goals of the Framework.

Framework Had Minimal Impact on Health and Environmental Concerns

After 3 years of development, EPA issued its Mining Framework in September 1997. In developing the Framework, EPA demonstrated some commitment to environmental goals by working with and obtaining comments from other Federal agencies, States, industry, and the environmental community. Ten of 15 survey respondents addressing a question on Framework effectiveness considered the Framework to be a useful document which, among other things, effectively summarized regulatory and nonregulatory tools, encouraged internal and external coordination in dealing with mine sites, and helped to establish useful contacts and networks. However, we found that human health and environmental concerns at hardrock mining sites have not been addressed through implementation of the Framework. Although 67 percent (10 of 15) of EPA survey respondents addressing this specific question indicated the Framework had been effective in addressing health and environmental concerns, only one of the 10 respondents identified specific sites which directly benefitted from implementation of the Framework. In addition, only one of eight external stakeholders identified specific sites which had benefitted from the Framework guidance.

Regardless of their affiliation, only one of eight external stakeholders we interviewed could identify any environmental progress or impacts associated with the Framework. The Mineral Policy Center, an environmental organization, considered the Framework to be a "paper policy" that had no real impact at hardrock mining sites. Western Governors' Association officials were not aware that EPA's Framework was being used, nor had heard much about the Framework since it was issued in 1997. NMA, representing the mining industry, indicated that it had not observed any environmental impacts from implementation of EPA's Framework. NMA believed that the Framework was not needed, since the industry was already extensively regulated by other Federal and State agencies. U.S. Department of Agriculture officials were not aware of specific environmental improvements that could be attributed directly to the Framework, although they noted that the Framework appropriately stressed the need for agencies to work together to address problems at hardrock mining sites.

Framework Was Not Effectively Implemented

Lack of An Implementation Plan

EPA did not articulate a plan or strategy for implementing the Framework once it was completed. Although the Framework contained a set of action items to help implement Framework recommendations, no timeframes, project milestones, priority-setting procedures, outcome measures, or resource needs were established. This is particularly important because the Framework has very ambitious and broad goals. For example, when EPA was soliciting comments on the Framework, at least one other Federal agency noted that "our biggest concern is the apparent lack of ranking or priorities of effort....the proposal involves a process so enormous and complex that it will clearly drain the very limited resources agencies need to conserve for environmental protection." In addition, accountable offices were not specified for several key Framework action items. Specifically, no headquarters office was assigned responsibility for developing a cross-program mining team, promoting the National Interagency Coordinating Committee, or requesting comments on whether a reexamination was warranted on the exclusion of certain wastes as "hazardous" wastes under RCRA.

Agency Management Did Not Adequately Support Framework

Eleven of 15 (73 percent) survey respondents addressing a question regarding Framework impediments (see Appendix B) noted that EPA management did not adequately support implementation of the Framework. In addition, due to demands associated with a new National Pollutant Discharge Elimination System (NPDES) program, Total Maximum Daily Loads rules, and declining resources, the Office of Water, the lead EPA office tasked with developing the Framework, chose to discontinue involvement with it and the hardrock mining area shortly after the Framework was issued. By default, this left the Office of Solid Waste

and Emergency Response to essentially assume responsibility for the Framework. In February 2000, the Regional Administrator for Region 10 sent a memorandum to EPA's Deputy Administrator noting a Regional consensus that the Office of Water assign a headquarters mining team leader to assume the lead in following up on the recommendations contained in the Framework. We could not find evidence that any action was taken on the basis of this memorandum.

Lack of Intra- and Interagency Coordination

Our survey results and interviews indicated that there was inadequate coordination within EPA and between EPA and other Federal agencies regarding hardrock mining activities. In addition, there are varying priorities among Federal agencies in relation to hardrock mining issues, and no plans to identify, acknowledge, and work with the priorities of other agencies. For example, the Department of Interior's Office of Surface Mining indicated that safety at abandoned mine sites was considered to be a higher priority than environmental protection. The National Research Council study also noted a lack of early, consistent cooperation and participation by all Federal, State, and local agencies involved in developing or reviewing Environmental Impact Statements (EISs). According to the National Research Council, this lack of coordination has resulted in excessive costs and delays in mine permitting.

Although the Framework recommended promoting a National Interagency Coordinating Committee on mining, EPA staff told us that there has been little EPA support for the Committee. The National Interagency Coordinating Committee was envisioned by EPA's National Mining Team as a senior-management-level forum for discussing and coordinating varying Federal agency policies and regulations in the area of hardrock mining. The Committee was to have included participants from several agencies, such as EPA, Bureau of Land Management, U.S. Forest Service, Office of Surface Mining, and U.S. Geological Survey. Although some activity took place at the EPA staff level, personnel in Regions 8 and 10 said that headquarters had not promoted the Committee, and Region 9 mining staff were unaware of any work the Committee had done. According to Office of Solid Waste and Emergency Response representatives, the Committee's memorandum of understanding was allowed to lapse and was not reinitiated.

Framework Recommendations Not Consistently Implemented

Survey respondents indicated that some recommendations and action items were not fully and consistently implemented. Specifically, as mentioned above, it did not appear that action had been taken to promote and support the National Interagency Coordinating Committee, which several respondents deemed crucial for working with other Federal agencies to prioritize and address environmental concerns at hardrock mining sites. Similarly, we were told that little action has been taken to solicit comments on a reexamination of high-risk mine wastes

currently exempt from hazardous waste regulations. In addition, we were told that little progress has been made to encourage the reprocessing of mine wastes as a component of site cleanups or to provide information to stakeholders on the availability of grants for mine site remediation. See Appendix D for a summary table of the results.

On the other hand, our survey responses indicate that some actions have been taken on implementing some recommendations and action items. For example, EPA regions which have significant hardrock mining activity (i.e., Regions 8, 9, and 10) have developed regional mining strategies; the Agency had prepared guidance and provided some training on site assessment, investigation, and screening tools (e.g., Office of Emergency and Remedial Response issued an Abandoned Mine Site Characterization and Cleanup Handbook in 2001); efforts have been made to integrate permitting and site evaluation activities where possible; and regions have encouraged cleanup actions by responsible parties at mine sites.

EPA Has Limited Authority to Regulate Hardrock Mining Activities

The nature of hardrock mining laws and regulations and how they are implemented present obstacles to what EPA can realistically accomplish in terms of preventing or minimizing environmental impacts during the earliest stages of mining operations. Although EPA's explicit goal in developing the Framework was not to attempt to broaden Agency authorities, this was not a realistic assumption given the Framework's broad goal to protect human health and the environment at hardrock mining sites on Federal lands and at active or proposed hardrock mining operations --- where EPA has very limited or no direct regulatory authority.[5]

Hardrock mining occurs on both public (i.e., Federal) and private lands, although the majority of it occurs on public lands in western States. EPA's role and authority in regulating hardrock mining activities is different on public and private lands (see Figures 2.1 and 2.2), and many sites in the western United States have a combination of Federal and private ownership, making regulatory efforts that much more complex. Further, the Agency has limited authority to directly establish up-front pollution controls at hardrock mining sites in order to prevent or control environmental impacts. Existing authorities (i.e., Comprehensive Environmental Response, Compensation, and Liability Act [CERCLA]) largely allow the Agency to respond after environmental problems have occurred. Other

[5]Ten of 15 survey respondents (67 percent) who addressed the survey question on the viability of the Framework considered it to be viable or potentially viable under current Agency authorities. That is, most respondents believed that EPA had the appropriate authority to accomplish the tasks outlined in the Framework. We did not independently verify whether EPA has the authority to accomplish specific tasks outlined in the Framework. Rather, we evaluated the likelihood that EPA could achieve the broad goals of the Framework given the Framework's objectives and EPA's authorities.

EPA pollution permitting authorities are delegated to the States through major environmental laws (i.e., Clean Air Act, Clean Water Act, and RCRA).[6] However, there are many cases where State permitting and enforcement programs are not effective for the various environmental programs that have been delegated to the them. In addition, little mining waste is subject to RCRA regulation as hazardous waste. The various authorities that provide EPA some ability to regulate or clean up environmental impacts of hardrock mining are discussed briefly in the following pages.[7]

[6]Under the Surface Mining Control and Reclamation Act States that have coal mining activity may also receive some funds to remediate safety and environmental hazards at abandoned hardrock mines. The Act established a federal mechanism to encourage States to remediate hazardous conditions caused by abandoned coal mines. After eligible States have completed reclamation of abandoned coal mines, they may use funds under the Act to remediate environmental hazards at abandoned hardrock mines.

[7]Generally, these authorities will apply to hardrock mining operations that began after the various laws were passed and regulations were promulgated. Due to limitations in existing data, it was not possible for us to determine the percent or number of hardrock mining sites (active or abandoned) that fall outside existing regulations.

Figure 2.1. EPA's Role in Regulating Hardrock Mining on Public (Federal) Lands

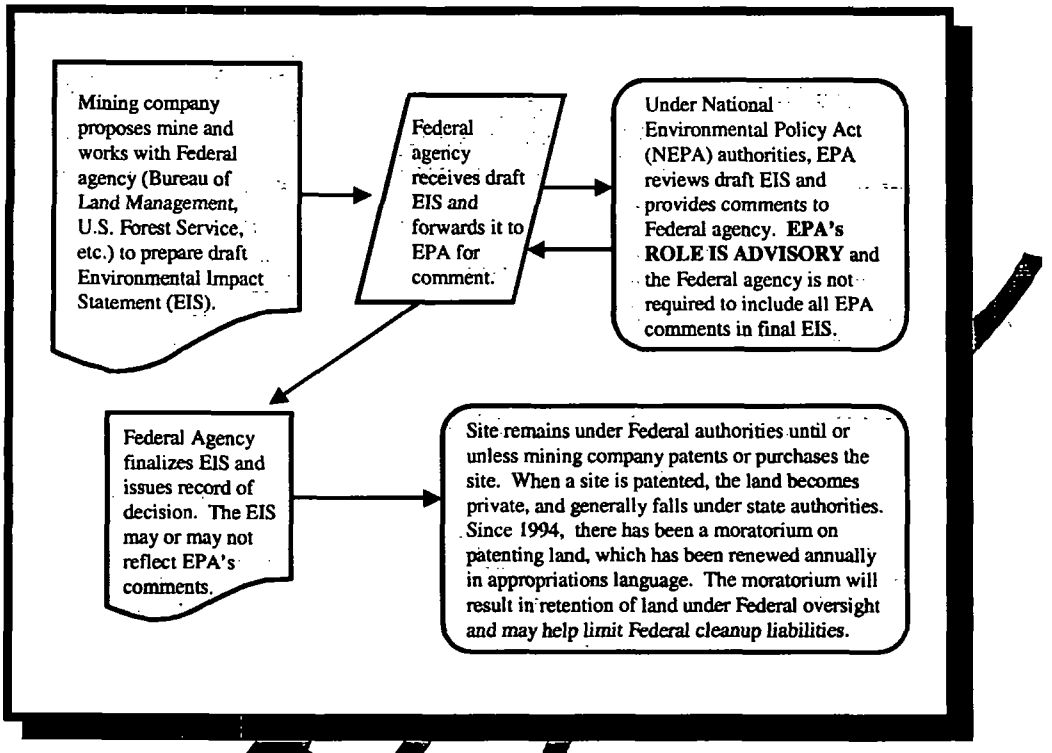
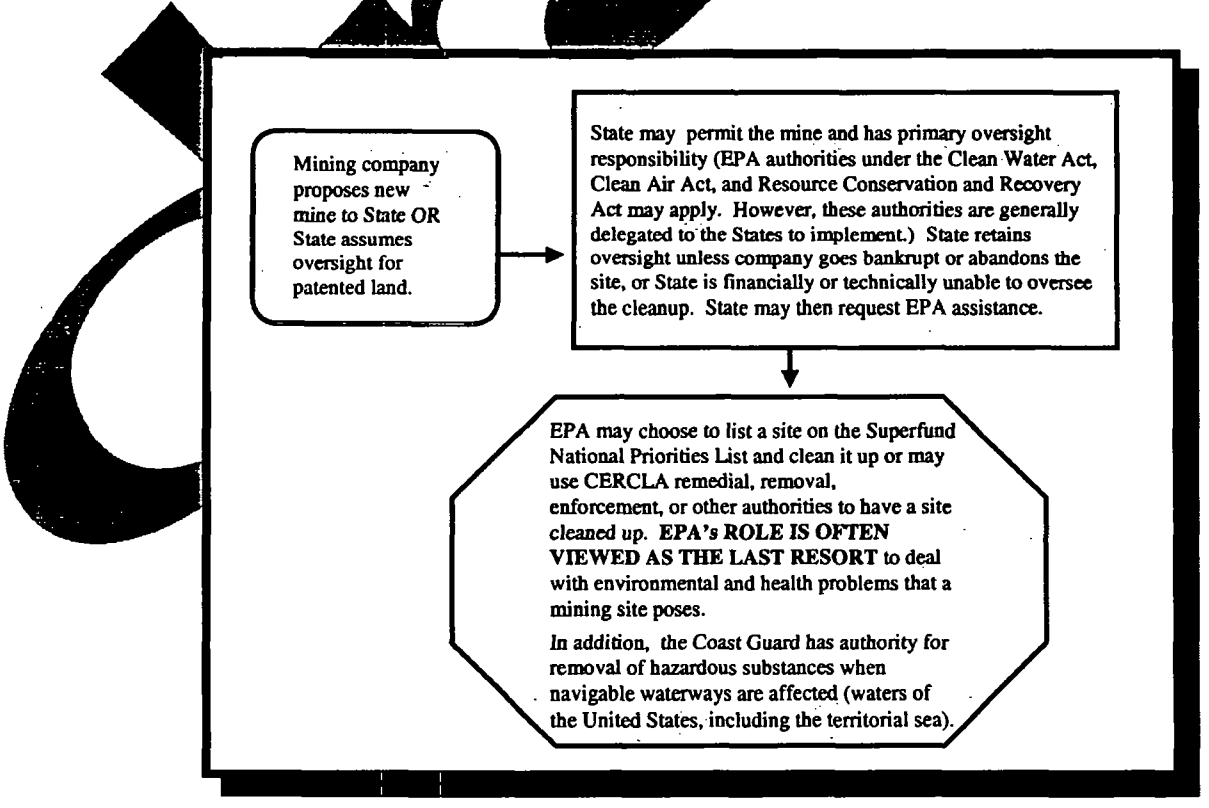


Figure 2.2. EPA's Role in Regulating Hardrock Mining on Private Lands



Limiting Factors for EPA: Environmental Regulations and Hardrock Mining

The **Clean Water Act** provides for regulation of discharges of pollutants into U.S. waters via the NPDES permit program. An NPDES permit obtained for a mining site would establish standards for pollutants discharged from the site. The Clean Water Act allows EPA to delegate many permitting, administrative, and enforcement aspects of the law to the States, and all but four States have been authorized to administer the NPDES program.[8]

RCRA is designed to ensure that solid wastes (including hazardous wastes) are managed in a manner that is protective of human health and the environment. RCRA has rulemaking designed to determine which mining wastes should be regulated as "hazardous waste." As a result of the 1980 RCRA Bevill amendment and subsequent EPA action regarding waste produced from the extraction, benefication, and processing of ores and minerals, relatively little mining waste is subject to RCRA regulation as hazardous waste.

Under the **National Environmental Policy Act** (NEPA), Federal agencies prepare EISs for major actions which can have a significant effect on environmental quality, such as a mining operation. EPA can comment on EISs developed by other agencies but cannot compel other agencies to address EPA concerns during the EIS and permitting process. When other agencies finalize an EIS for mine sites, these sites generally remain under the other agencies' authorities until the mine land is patented (purchased), when they become private land and States assume the lead role in regulating them. (As noted in Figure 2.1, since October 1994, there has been a moratorium on patenting land.)[9]

The **Clean Air Act** gives EPA authority to set national standards to protect human health and the environment from emissions that pollute ambient (outdoor) air. The Act assigns primary responsibility for ensuring adequate air quality to the States and not EPA. Generally, pursuant to the Clean Air Act, States require permits at most hardrock mining operations. These permits may include controls for fugitive dust, particulate matter, sulfur dioxide emissions, certain metals, and

[8]In an August 2001 review, the National State Auditors Association found that several States had not effectively administered some aspects of their water programs.

[9]Information provided to us from Western Governors' Association officials, indicates that the Association recommended that EPA become more involved in mine permitting from the beginning of the process, rather than at later stages, when the Agency's participation might be disruptive and could lengthen the process. In addition, the National Research Council observed that active stakeholder participation through the NEPA process rarely occurred in a timely fashion, and noted that the decisionmaking process was more effective the earlier that joint involvement occurred.

volatile organic compounds. Again, EPA would not have a primary regulatory role where States are delegated authority.[10]

CERCLA authorizes EPA and other Federal agencies to respond to environmental threats at mineral mining and processing sites through emergency removal actions and longer-term site remediation or cleanup.[11]

Other Federal agencies, including the Bureau of Land Management, U.S. Forest Service, and National Park Service, have authority for helping to prevent environmental degradation at hardrock mining sites. However, prior research has shown that land management statutes and regulations for ensuring environmentally responsible resource development had not been consistently implemented by Federal agencies.[12]

Other Limiting Factors for EPA: Financial Assurance Requirements

Financial assurance, or the amount of money mine owners or operators are required to provide for cleanup in the event of owner bankruptcy or mine abandonment, is regulated by the States. Inadequate financial assurance for hardrock mine cleanup has resulted in higher costs to Superfund and EPA. Some States set a ceiling on the amount of financial assurance that they will collect. Also, some States base the amount of financial assurance on the number of acres of land disturbed, rather than on potential environmental damage. In addition, CERCLA may have the unintended effect of imposing an artificial limitation on the amount of financial assurance States may require. CERCLA 104(c)(3)(C) requires that States fund 10 percent of the cost of an EPA-financed cleanup. States may be motivated to require only that amount of financial assurance which would cover 10 percent (the State share) of the estimated cleanup costs, rather than require financial assurance for the total estimated costs. While we have not

[10]Not all States may exercise this authority properly, as shown by a March 2002 Legislative Auditor for the State of Louisiana report that the State's Department of Environmental Quality had not inspected 15 percent of all major source air facilities for a period of 3 years or more, and that 22 percent of sampled required self-monitoring reports required under facility permits had not been submitted to the Department.

[11]CERCLA's long-term liability provisions can be a disincentive to voluntary cleanup of abandoned mine sites by new mine operators. Consequently, voluntary cleanup opportunities are missed, Federal liability remains, and undisturbed lands may be selected instead for new mining operations. Although the Western Governor's Association has proposed Good Samaritan legislation to protect voluntary parties from liability for continuing discharges at abandoned mine sites, a representative in the Agency's Office of Water told us the Agency has not been actively involved in discussions regarding this potential legislation.

[12]In its 1999 report, the National Research Council noted that implementation could be improved by better information management. For example, there was a lack of data needed to characterize lands available for mineral development and to track mining and regulatory compliance. The National Research Council also found a need for better understanding of current laws and regulations and improved efficiency in completing environmental reviews under NEPA and issuing operating permits. Ultimately, it appears other Federal agencies have experienced the same type of problems that have hampered EPA's effective implementation of the Framework.

conducted an independent review of this, an obvious incentive is that by requiring less financial assurance, a State may attract more mining companies, resulting in more jobs and additional tax revenue for the State.

Gaps Constrain Framework Implementation

Based on our analysis of survey responses and information obtained from interviews, we determined that there are gaps in the Framework. These gaps impede EPA efforts to address and understand the environmental problems posed by hardrock mining activities and achieve desired environmental improvements or protections. They are:

- A lack of data regarding the financial and environmental impacts of hardrock mining makes it difficult to determine appropriate management strategies and actions to address potential problems. A key implementation action in the Framework involves collecting information to determine the extent and significance of mining activity. However, these actions have not occurred systematically: Only three of the seven regions (8, 9, and 10) which completed our survey developed Mining Strategies as recommended in the Framework, and only Regions 9 and 10 had developed regional Mining Profiles. However, information included on inactive and abandoned mines in the profiles as recommended in the Framework was limited. In addition, the profiles had not been updated since they were first completed (1996 for Region 10 and 2000 for Region 9). In their 1999 report, the National Research Council also noted a lack of reliable information regarding mining on Federal lands. In addition, the NMA told us that the Framework does not accurately portray the current hardrock mining industry. They said the Framework needs to be updated because it cites historical impacts of mining and implies that these exist at currently operating mines.

- The Framework did not mention the importance of considering future land use at mine sites when planning for reclamation. The National Research Council has stated that reclamation decisions should carefully weigh potential future uses of mine lands.

Conclusions

EPA's Hardrock Mining Framework was considered by many of those surveyed and interviewed as having program management value. The Framework was seen as a useful guidance document, coordination mechanism, and educational tool for helping to deal with the environmental concerns posed by some hardrock mining activities. The Framework is considered a substantial improvement over previous fragmented efforts to deal with the impacts of hardrock mining. However, although EPA spent 3 years developing the Framework to help address human health and environmental concerns posed by hardrock mining, and the Framework has been available for 5 years, we found little evidence that the Framework

contributed to environmental improvements or protections at specific hardrock mining sites.

There are regulatory and nonregulatory reasons why the Framework has been unable to demonstrate environmental results. Addressing and resolving the regulatory and nonregulatory issues will provide a more realistic context for determining the current likelihood of achieving environmental goals associated with the existing framework. First, although EPA was perceived to have adequate authority to implement the Framework, the nature of hardrock mining and environmental laws and regulations and the manner in which they are implemented present obstacles to what the Agency can realistically accomplish in preventing or minimizing the environmental impacts of hardrock mining. Second, EPA did not provide an effective strategy for implementing the Framework, management did not support it, and there was inadequate coordination within the Agency and between EPA and other agencies. Finally, current, accurate data on the extent of financial and environmental challenges posed by hardrock mining activities is needed to assist management in determining appropriate strategies and actions to address existing and potential problems and to consider the viability and relevance of the existing Framework. The Agency could consider modifying existing policies and regulations to help achieve the environmental protection goals of the Framework if current program management supports the utility and relevance of the Framework.

Recommendations

EPA program management, including the Deputy Administrator, Assistant Administrator for the Office of Solid Waste and Emergency Response, and other senior EPA management the Administrator deems appropriate, need to determine if the Framework has current utility. If EPA program management believes the Framework has current utility in helping to achieve goals of protecting human health and the environment at proposed, active, and abandoned hardrock mine sites, we recommend that EPA:

2-1. Consistent with key implementation actions identified in the 1997 Framework, determine the estimated financial, human health, and environmental impacts associated with hardrock mining sites where the Agency currently has primary responsibility for handling cleanup (EPA-lead National Priority List sites), as well as hardrock mining sites where there is a future likelihood that EPA may have lead cleanup responsibility, such as sites with no other plausible lead, including a potentially responsible party lead. In addition, at minimum, EPA should indicate which Regions have relatively substantial hardrock mining activity and the status of mining operations or sites in these Regions (e.g., active, inactive, abandoned).

2-2. Develop effective implementation strategies that account for existing gaps in the framework, lack of necessary coordination, and regulatory challenges. Specifically address:

(a) Lack of a Framework implementation plan.

(b) Lack of internal and external Agency coordination among key stakeholders in hardrock mining.

(c) Lack of accountable and lead offices, Framework milestones, and performance measures.

(d) Limits in EPA regulatory authority, including those posed by provisions or implementation of existing environmental statutes (e.g., RCRA), that may hinder progress in achieving environmental goals of the Framework at hardrock mining sites.

2-3. If EPA program management does not believe the Framework has current utility in helping to achieve goals of protecting human health and the environment at proposed, active, and abandoned hardrock mines, we recommend that EPA identify specific Framework recommendations and action items that are unwarranted or may require revision.

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National Hardrock Mining Framework Recommendations and Action Items

Recommendations

Achieving Improved Environmental Protection

1. Promote improvement of scientifically-based predictive tools (e.g., acid mine drainage and metals mobility) used in evaluating the environmental impacts of mine sites.

1. Integrate NPDES permitting and NEPA site evaluation activities, where EPA has jurisdiction.

1. Promote an adequate consideration of environmentally protective standards and preferred alternatives in EISs.

4. Evaluate the adequacy of current waste management practices and promote standards of practice that achieve risk-based, long-term environmental goals.

Using Resources More Effectively

5. Promote utilization of a geographic/risk-based approach to prioritize inactive/abandoned mine cleanup.

6. Use targeted enforcement/compliance approaches to better focus resources on highest priority operations.

7. Work with the Army Corps of Engineers to consistently define "fill" and to apply the waste treatment exclusion.

8. Prepare guidance and provide training on CERCLA site assessment, investigation, and screening tools.

9. Compile and update information regarding grants available to fund remediation projects and distribute to stakeholders.

Promoting Fiscal Responsibility

10. Encourage development of cost-effective environmental control technologies for both active and inactive mine sites.

1. Evaluate the adequacy of mining EISs with regard to the provision of financial assurance for long-term support of environmental management systems.

1. Encourage reprocessing of historic mine wastes in conjunction with or as a component of site cleanup.

1. Develop or support legal/administrative mechanisms to encourage implementation of environmentally beneficial response actions at mine sites (e.g., Good Samaritan).

1. Work cooperatively to develop standardized methods for characterizing/analyzing environmental concerns, predicting geochemical changes, and establishing performance standards.

Action Items[13]

1. Regions form cross-program mining teams and establish Regional Mining Coordinators.

2. Headquarters establish a cross-program mining team.

1. Develop Regional Mining Profiles, meet with stakeholders to gather relevant data.

1. Develop Regional Mining Strategies to guide mining program improvements.

1. Headquarters promote the National Interagency Coordinating Committee on Mining as a forum for development of consensus approaches to critical technical and policy issues.

1. EPA sponsor periodic workshops on the "toolbox" approach to foster innovative problem solving, technology transfer, and stakeholder involvement.

1. Regions sponsor workgroups for methodology development for mine site characterization.

1. Regions hold workshops on Good Samaritan, reprocessing/remining, or legal/administrative obstacles.

1. Regions screen/prioritize upcoming mining EISs and become actively involved in all major mining EISs.

1. Headquarters requests comments on whether a reexamination of high risk Bevill wastes is warranted for future RCRA Land Disposal rulemakings. Consider revival of Policy Dialogue Committee.

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[13]In order to limit the amount of time required by respondents to complete our on-line survey questionnaire, we asked them to provide information on the progress made on Framework action items 1, 2, 3, 4, 5, and 10. The survey respondents did not provide any comments or information on the action items we did not include (6, 7, 8, and 9).

National Hardrock Mining Framework
Survey Questionnaire

Please complete the questions listed below. In completing the survey, we ask that you complete all questions that apply to you. For those questions that do not apply, please indicate by placing "not applicable" in the space provided.

For this survey to be meaningful, please be as specific as possible when answering each question. For example, where applicable, please indicate the names of mine sites in your responses. Also, include details on specific improvements which can be attributed to the Mining Framework as well as detailed information on any barriers to accomplishing framework goals, recommendations, and action items. Please cite actual examples to the extent possible.

If you have any questions about the use of this database please contact Tom Reilly at (202) 260-7644.
Thank you.

Submitted by: Frank Fennell on: 07/10/2002 04:10 PM

Select Additional Readers:

Select Additional Editors:

Submitting for:

Overall Questions:

- Is the mining framework viable (under existing EPA and governmental authority)? Please explain.
- Which office within EPA headquarters and/or within your region has the lead for implementation of the mining framework?
- What is your role in implementing the framework?
- What, if any, gaps are there with the existing framework (i.e. fragmented authorities, limited interagency coordination, etc...)?
- Is the mining framework effective in helping to resolve environmental concerns associated with hardrock mining activities? What human health and environmental concerns at hardrock mining sites have been or will be addressed by implementing the hardrock mining framework?
- How are you measuring your successes in implementing the mining framework?
- What barriers, if any, may prevent achievement of framework goals? What are EPA's limitations?
- How has EPA headquarters (or your specific region) identified joint cross program priorities that result in more efficient cross program solutions?
- What, if any, improvements can be made to the existing framework?

- **Should a comprehensive national hardrock mining strategy be established (i.e., one which includes roles of other federal and state agencies)? If so, how could this best be accomplished (i.e. what specific actions are needed to establish such a strategy)?**

Framework-Specific Questions

RECOMMENDATIONS

Achieving Improved Environmental Protection

1. **What has EPA headquarters (or your specific region) done to promote improvement of scientifically-based predictive tools used to evaluate environmental impacts of mine sites?**

2. **What has EPA headquarters (or your specific region) done to integrate permitting and NEPA site evaluation functions in those states where EPA retains NPDES responsibilities?**

3. **What has EPA headquarters (or your specific region) done to promote an adequate consideration of environmentally protective standards and preferred alternatives at proposed mine sites during EIS development?**

4. **What has EPA headquarters (or your specific region) done to evaluate the adequacy of current mine waste management practices and promote standards of practice that achieve risk-based, long-term, environmental protection goals?**

Using Resources More Efficiently

5. **What has EPA headquarters (or your specific region) done to promote use of geographic/risk-based approaches to determine priorities for inactive and abandoned mine reclamation?**

6. **How has EPA headquarters (or your specific region) used targeted enforcement and compliance approaches to focus resources on the highest priority mining operations?**

7. **How has EPA coordinated with the Army Corps of Engineers to:**

   (a) Develop a consistent approach to defining "fill material" (in context of Section 404 permitting)?

   (b) Determine applicability of waste treatment exclusion to certain mining activities?

8. **What guidance and training have been provided to state and federal agencies on the use of CERCLA site assessment, investigation, and screening tools for mine sites?**

9. **What has your region done to provide information to site management partners on grants available for mining remediation projects?**

Promoting Fiscal Responsibility

10. How has EPA headquarters (or your specific region) encouraged development of cost-effective environmental control technologies for active and inactive mines

11. What has EPA headquarters (or your specific region) done to evaluate the adequacy of EISs for mining operations in predicting long-term environmental impacts of mining operations?

12. What has EPA headquarters (or your specific region) done to encourage reprocessing of historic hardrock mine wastes in conjunction with, or as a component of, site cleanup?

13. What legal and administrative mechanisms has EPA developed to encourage implementation of environmentally beneficial response actions at mine sites?

14. How has EPA headquarters (or your specific region) worked with other mining stakeholders to develop standardized methods for characterizing and analyzing environmental impacts at mine sites, predicting and verifying acid mine drainage and metals mobility, and establishing environmental performance standards?

ACTION ITEMS:

- What has headquarters done to establish a cross-program mining team to foster effective working relationships with stakeholders at the national level (including other federal agencies) and provide appropriate support to the regions?

- What steps has headquarters taken to promote the National Interagency Coordinating Committee on mining as a forum to develop consensus approaches to critical technical and policy issues?

- What has headquarters done to solicit comments on whether a reexamination of high risk Bevill wastes is warranted with the possibility of bringing some high-risk waste streams under Subtitle C in a future rulemaking?

- If your region has significant mining activity, what has the region done to:

  (1) establish a Regional Mining Coordinator and a cross-program mining team?

- (2) develop a Regional Mining Profile to assess the scope of proposed, active, and inactive and abandoned abandoned mines in the region?; and

- (3) develop Regional Mining Strategies to guide mining program improvements?

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Appendix C

National Mining Association Summary of Comments

The National Mining Association (NMA) submitted extensive comments to OIG regarding EPA's National Hardrock Mining Framework. NMA's comments are summarized below.

- NMA considered the Framework to be essentially a command-and-control strategy designed to position EPA as the "lead agency" for any environmental matter involving hardrock mining. The document did not recognize the leading role played by States and other Federal agencies in regulating potential environmental concerns related to hardrock mining. There was no discussion of State and Federal mining and reclamation programs and State agencies having primacy over several environmental programs, such as the Clean Air Act and Clean Water Act.

- NMA indicated that the Framework did not appear to be reasonable or necessary. The Framework failed to recognize how environmental concerns are already being addressed by numerous other Federal and State regulatory programs. NMA believed EPA should have a secondary or support role to the other Federal and State agencies and to assist if, and when, called upon.

- The Framework unfairly focused on an industry already extensively regulated in many environmental media areas, including air, water, waste management, and site reclamation and closure. Most current environmental protection activities at hardrock mine sites are being done voluntarily or under State or local programs.

- The Framework should not have suggested an expansion of EPA's authorities in the area of hardrock mining and should have adhered to its stated purpose, that is, understanding and improving the use of existing authorities to address environmental concerns posed by hardrock mining. As an example, the Framework suggested reexamining "high-risk" Bevill mining wastes with the possibility of including such wastes under RCRA Subtitle C - hazardous waste regulation. NMA strongly believed that this would be an unwarranted expansion of EPA authority.

- The Framework did not accurately portray the modern hardrock mining industry and did not describe the true effect the Framework could have on the economic health of the industry. The document cited historical impacts of mining and inferred that such impacts exist at currently operating mines. NMA noted that many mining sites on the Superfund National Priorities List were historic mining sites which were never regulated under existing local, State, and Federal law. NMA said that the programs of other Federal and State agencies adequately address the potential impacts at current sites.

- NMA indicated that the Framework should include more information on the benefits derived from hardrock mining.

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Appendix D

Breakout of Survey Responses Regarding Implementation of EPA National Hardrock Mining Framework Recommendations and Action Items

Recommendations

Survey Question/Recommendation	No. of surveys indicating efforts were made to implement recommendation	No. of surveys where it did not appear efforts were made to implement recommendation	No. of surveys where no response was given, response was "N/A," or survey question was not addressed	No. of surveys where it was unclear efforts were made to implement recommendation
(1) What has EPA headquarters (or your region) done to promote improvement of scientifically-based predictive tools used to evaluate environmental impacts of mine sites?	8		6	2
(2) What has EPA (or your specific region) done to integrate permitting and NEPA site evaluation functions in those States where EPA retains NPDES responsibilities?	5	2	9	
(3) What has EPA headquarters (or your specific region) done to promote an adequate consideration of environmentally protective standards and preferred alternatives at proposed mine sites during EIS development?	6	2	8	
(4) (a) What has EPA headquarters (or your specific region) done to evaluate the adequacy of current mine waste management practices?	2	2	12	
(4) (b) What has EPA headquarters (or your specific region) done to promote standards of practice that achieve risk-based, long-term, environmental protection goals?	5	2	9	
(5) What has EPA headquarters (or your specific region) done to promote use of geographic/risk-based approaches to determine priorities for inactive and abandoned mine reclamation?	5	1	9	1
(6) How has EPA headquarters (or your specific region) used targeted enforcement and compliance approaches to focus resources on the highest priority mining operations?	6	3	7	
(7) (a) Has EPA coordinated with the Army Corps of Engineers to: Develop a consistent approach to defining "fill material" (in context of Section 404 permitting)?	1	5	10	

Survey Question/Recommendation	No. of surveys indicating efforts were made to implement recommendation	No. of surveys where it did not appear efforts were made to implement recommendation	No. of surveys where no response was given, response was "N/A," or survey question was not addressed	No. of surveys where it was unclear efforts were made to implement recommendation
(7) (b) Has EPA coordinated with the Army Corps of Engineers to: Determine applicability of waste treatment exclusion to certain mining activities?		5	11	
(8) What guidance and training have been provided to State and Federal agencies on the use of CERCLA site assessment, investigation, and screening tools for mine sites?	9		7	
(9) What has your region done to provide information to site management partners on grants available for mining remediation projects?		2	13	1
(10) How has headquarters (or your specific region) encouraged development of cost-effective environmental control technologies for active and inactive mines?	7		9	
(11) What has EPA headquarters (or your specific region) done to evaluate the adequacy of EISs for mining operations in predicting long-term environmental impacts of mining operations?	4	2	8	2
(12) What has EPA headquarters (or your specific region) done to encourage reprocessing of historic hardrock mine wastes in conjunction with, or as a component of, site cleanup?	3	3	8	2
(13) What legal and administrative mechanisms has EPA developed to encourage implementation of environmentally beneficial response actions at mine sites?	6	1	8	1
(14) How has EPA headquarters (or your specific region) worked with other mining stakeholders to develop standardized methods for characterizing and analyzing environmental impacts at mine sites, predicting and verifying acid mine drainage and metals mobility, and establishing environmental performance standards?	5	1	9	1

Action Items

Survey Question/Action Item	No. of surveys indicating efforts were made to implement action item	No. of surveys where it did not appear efforts were made to implement action item	No. of surveys where no response was given, response was "N/A", or survey question was not addressed	No. of surveys where it was unclear efforts were made to implement the action item
What has headquarters done to establish a cross-program mining team to foster effective working relationships with stakeholders at the national level (including other Federal agencies) and provide appropriate support to the regions?	7	2	7	
What steps has headquarters taken to promote the National Interagency Coordinating Committee on mining as a forum to develop consensus approaches to critical technical and policy issues?	1	8	7	
What has headquarters done to solicit comments on whether a reexamination of high-risk Bevill wastes is warranted with the possibility of bringing some high-risk waste streams under Subtitle C in a future rulemaking?	1	2	9	4
If your region has significant mining activity, what has the region done to establish a Regional Mining Coordinator and cross-program mining team?	6	1	9	
If your region has significant mining activity, what has your region done to develop a Regional Mining Profile to assess the scope of proposed, active, and inactive and abandoned mines in the region?	2	3	10	1
If your region has significant mining activity, what has your region done to develop Regional Mining Strategies to guide mining program improvements?	3	2	11	